INTRODUCTION

The speculations of early civiliztions regarding the nature of the earth were mostly based on lore and legend rather than scientific thought. But a few individuals did manage some remarkable insight. The Greek historian Herodotus, who lived during the 5th century B.C., correctly deduced that the Mediterranean Sea had once extended much farther to the south based on the discovery of fossil shells in the interior parts of Egypt and Libya. During the 3rd century B.C., the Greek mathematician Eratosthenes concluded the Earth was spherical, calculated its diameter and circumference. Yet, few people believed or could even comprehend such assertions. Misconceptions and prejudices regarding the nature of the earth came and went through the centuries. Only a little more than 500 years ago, sailors aboard Columbus' ships begged him to turn back, because they were fearful that they would fall off the edge of the earth. Until recently, most people held the traditional belief that the earth's age could be measured on the order of thousands of years, not millions or billions.

We now know that the earth is more than 4.5 billion years old, and that the surface of the earth has undergone continual change. Limestone that now comprises a mountain was once a coral reef in an ancient tropical sea hundreds of millions of years earlier. Granitic rock that now soars thousands of feet above sea level was originally formed deep in the earth's crust. Water and wind erode the rocky faces of mountains and carry away the bits of rock to accumulate as sediments in a lake or ocean. The sediments become buried and compacted and form new rocks, which in turn form new mountains and complete the natural cycle. Scientists use their knowledge of how rocks form and change and how old they are in order to deveop a comprehensive understanding of the earth and its geologic history.